



Course Syllabus

COURSE TITLE: Algebra II

PREREQUISITE: Algebra I and Geometry

DESCRIPTION: Algebra II students extend the concepts of Algebra I. A thorough study of advanced algebraic concepts is provided through the exploration of functions, polynomials, rational expressions, sequences and series, complex numbers, and matrices. Students will create graphs using translation, reflection, dilation, and rotation.

MAIN TOPICS: Identify field properties, axioms of equality and inequality, and properties of order for the sets of real and complex numbers and matrices.

Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.

Perform operations with rational expressions. Perform operations with expressions containing rational exponents. Write radical expressions as expressions containing rational exponents.

Factor polynomials completely.

Solve quadratic equations over the set of complex numbers. Solve equations containing rational expressions and equations containing radical expressions.

Analyze the normal distribution. Key concepts include the characteristics of normally distributed data, percentiles, normalizing data using z-scores, the area under the standard normal curve and probability

Use principles of combinatorics in probability calculations.

Recognize and convert between multiple representations of functions. Find the domain, range, zeros, and inverse of a function; the value of a function for a given element; and the composition of multiple functions. Investigate and describe the relationship between solutions, zeros, x-intercepts, and factors.

Investigate and analyze absolute value, square root, cube root, rational, polynomial, exponential, and logarithmic function families.

Solve nonlinear systems of equations.

Investigate and apply the properties of arithmetic and geometric sequences and series.

Perform operations on complex numbers and simplify the results.

Identify, create, and solve problems involving variation.

CREDIT INFO: This course may provide a standard unit of credit for a Standard, Standard Technical, Advanced Technical, or Advanced Studies Diploma.